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ABSTRACT

Integrated learning systems (ILS) are comprehensive packages of computer based instruction that includes hardware, courseware, and an instructional management system. This paper describes and evaluates the ILS being used by Yupiit school district (Alaska). The basic program consists of a K-12 reading, writing, and math system made by Jostens Learning Corporation. The paper offers responses to the following five questions: (1) What is an ILS?; (2) How well can the Jostens system match the districts' curricula?; (3) What unique characteristics does the system have, and how critical are they to success?; (4) What is the future for a computer-based ILS in bush schools?; and (5) What are some recommendations for more effective use of ILS in bush schools? The responses to these questions are drawn largely from Jostens Learning Corporation materials and from a survey of Alaska teachers using the system. The system uses multimedia technology, including full-color display, animation, music, digitized human voice, and mouse and keyboard input throughout the entire curricula. Teachers reported a largely favorable assessment of the ILS, while expressing the need for continued inservice training. The document concludes that the teacher's role is crucial to curriculum development, including the selection and use of integrated learning systems. (TES)

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COMPUTER BASED INTEGRATED LEARNING SYSTEMS IN RURAL ALASKA: AN EVALUATION OF THE JOSTENS LEARNING SYSTEM

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Integrated Learning Systems in Rural Alaska:
An Evaluation of the Jostens Learning System

Village schools in Alaska face problems which are often unique because of cultural differences, physical isolation of the villages, and high staff turnover. Students may learn to speak English only after they enter school where they habitually fare poorly on standardized tests and in academics generally. The need to "do something" has spurred schools to blunder along in trial and error fashion from one touted remedy to the next, filling storerooms and closets with scarcely tested equipment and books as teachers and administrators move away and others take their places. Lack of continuity, perhaps as much or more than other factors, leads to discouragement. In a nation of students at risk, there may be none more at risk than those in the village schools of Alaska.

The need to do something is stronger than ever if students are to face the years ahead confidently and competently. In two Alaskan school districts something vastly different is being attempted by a collection of brave individuals who believe the future both of the students and the villages is worth the risk. They are working with a computer based integrated learning system, which is the subject being investigated in this paper.

Almost two years ago the first integrated learning system was installed in the elementary school at Akiakchak, on the Lower Kuskokwim River. The most recent installation in January, at the high school in the same village, is the fifth instructional system of this type to be brought on line in this part of the state, which is served by the Yupiit and Lower Kuskokwim REAAs.

The basic program consists of a K-12 reading, writing and math system from a company called Jostens Learning Corporation. Jostens' comprehensive curricula, ingenious graphics and voice, use of compact disc technology,

tailored to each student and to staff development programs has helped it reach the dominant position in market share, with more than 4,500 schools supported nationally.

However, such features do not necessarily equate with educational effectiveness in rural Alaska or elsewhere. It was not the intent of this investigation to delve into software functions more than necessary to acquaint the reader with the ILS as it is currently used in bush schools. First, I visited Mountain View Elementary School in Anchorage, Alaska both to become familiar with the system and with the attitudes and comments of staff personnel towards it. During the visitations, I interviewed students and staff to develop potential interview questions for those who are using a computer based integrated learning system in the bush. Then I visited the bush schools in the Yupiit School District and observed students at work in the computer labs. I interviewed students, teachers and administrators in those schools.

After returning to Anchorage, I mailed follow-up interview questions to each professional educator in those schools who are utilizing the computerized integrated learning system in order to elicit additional comments.

The interviews were used to seek answers to several questions:

1. What is an integrated learning system?
2. How well can the Jostens' system match the districts' curricula?
3. What unique characteristics does the system have, and how critical are they to success?
4. What is the future for a computer based integrated learning system in bush schools?
5. What are some recommendations for more effective use of integrated learning systems in bush schools?

The remainder of this report will focus on the responses to these questions.

QUESTIONS TO BE ANSWERED BY THIS STUDY

What is an integrated learning system?

An integrated learning system is considerably more than a collection of stand-alone computer programs used in education. The word integrated indicates that parts are put together in such a way as to form an inclusive whole. "Integrated learning systems are comprehensive packages of computer based instruction that focus primarily on basic skills" (McCarthy 1989). However, "The definition of an ILS appears to be expanding, in that basic skills instruction is, in an increasing number of cases, being supplemented by inquiry-based learning, e.g. multi media encyclopedia, science, etc. which foster social interdependency skills and learning by discovery components" (Lapham 1990). The components comprising the ILS include hardware, courseware, and an instructional management system" (McCarthy 1989).

The skills which are usually considered basic are reading, language arts, and mathematics. ILS courseware consists of tutorials, problem-solving software, drill and practice lessons, and tests, and can include a variety of multi media components such as the Compton's Multimedia Encyclopedia. The instructional management system indicates the number of lessons a student has attempted and/or completed, time on task, and his standing in his class. It also produces other pertinent reports such as those identifying specific areas of student difficulty.

How well can the Jostens' system match the districts' curricula?

Planning is basic to curriculum matching. The teacher is the key. "Arriving at the right technological solution is an equation of curriculum need and teacher acceptance" (Barbour 1989).

In order to realize the most satisfactory results from any instructional tool, the following steps should be taken:

1. The teacher must be familiar with the curriculum as it presently exists. In bush districts with high teacher turnover rates, this may indicate a need for staff inservicing of a kind perhaps not previously undertaken. However, if improvement of instruction is the goal of the public schools, it is imperative that every teacher and administrator understands the status of the present curriculum.
2. The teacher must identify the specific problem areas of the curriculum that have not responded to more traditional teaching approaches in order to isolate the areas where improvement efforts will be focused.
3. The teacher must set specific goals for improvement, together with a realistic time schedule for evaluation of achievement.
4. The teacher must select the technological tool which will provide the greatest assistance toward accomplishment of the instructional goals.
5. The teacher must establish appropriate means for measuring goal attainment.

Jostens Integrated Learning System is a flexible tool which teachers can use as they decide most appropriate to their particular instructional

needs. Therefore, it is possible for the ILS to be completely coordinated with the districts' curricula.

> "The curricula of Jostens Learning reflect the combined efforts of nationally recognized experts in various content areas, instructional design and computer application. Lessons closely parallel the scope and sequence of major basal textbooks and address concepts measured by standardized tests. Jostens Learning ensures that each program will meet the needs of the district by providing detailed comparison studies with textbooks and tests used by the district as well as with state and/or district objectives" (Jostens Learning Corporation 1989).

What unique characteristics does the system have, and how critical are they to success?

The Jostens Integrated Learning System is structured, yet its flexibility enables the teacher to conform it to his/her own teaching style and student needs.

"Jostens Basic Skills program consists of "learning experiences that use full-color technology, animation, music, digitized human voice, plus mouse and keyboard input throughout the entire curricula both to motivate and teach" (Jostens Learning Corporation 1989). "The self-paced, individualized lessons "integrate reading, writing, speaking and listening instruction with special activities for interdisciplinary learning experiences in science and social studies" (Ibid.)

The goal of the Reading Curriculum, to help students develop essential skills and processes for becoming independent readers and critical thinkers, is addressed through multiple approaches to tasks and through lesson branching. "The Directed Reading-Thinking Activity guides students in the use of higher-order thinking and in the development of critical thinking ability that extends knowledge beyond the printed

page." A summary of the reading selection is presented on the computer so the students can review it prior to taking a comprehension test (Ibid.)

The Jostens Writing Program provides a structured framework for assisting students, grades 4 and above, to master writing skills. This program guides students through the stages often followed by professional writers: prewrite, draft, revise and rewrite, edit, and publish.

The link between reading and writing is strengthened through the use of 20 special writing lessons which "provide instructional models for teaching important composition tasks. These interdisciplinary lessons contain a combination of printed and on-screen activities designed to challenge and motivate students to think about, discuss and integrate their own experiences into their writing." Peer interaction is encouraged. "An off-line reading selection provided by Jostens Learning allows students to share in a scenario which offers a specific purpose for writing and establishes an audience with a predetermined writer-reader relationship " (Ibid.)

The Writing Processor, a writing tool that enables students to organize their ideas for writing, combines the standard functions of word processing programs, an on-line user's program and unique features such as electronic outlining, a spelling checker and thesaurus, peer-review checklists of the features of good writing, split screen windows, underlining, and boldface capabilities. "On-line help includes composition models and hypertext, which defines and voices key vocabulary words for students " (Ibid.)

Typing skills are taught in a 15-lesson keyboarding program which emphasizes accuracy rather than speed. Even younger students can master

the typing, permitting them to focus then on fluent expression of ideas rather than on mechanics. Language arts content is reenforced at the same time that students learn to capitalize and type punctuation marks. Evaluative criteria is provided if the teacher desires to use it.

The more than 750 K-8 lessons in the Jostens Mathematics Curriculum are structured and sequenced to complement basal instruction, specifically incorporating the priorities of the National Council of Teachers of Mathematics for the 1990s (Jostens Learning Corporation 1989).

Specific instruction prevalent throughout the curriculum is provided in mental computation, estimation, and problem solving. Though the math curriculum is comprised of three parts: Basic Knowledge, Operation Skills, and Applications, more than half of the instruction is based on Applications, in keeping with the Jostens philosophy that "Problem solving should be the functional capstone of any mathematics curricula " (Ibid.) A split-screen calculator is accessible for student use when appropriate.

The Yupiit School District's teachers and administrators participating in this study reported that the students for the most part enjoy Jostens, looking forward to the time period in the computer lab each day. It was reported that the individualized lessons for which they receive instant feedback in a non-threatening environment promote student feelings of self-esteem, pride in accomplishment, and independence. Some teachers reported a decrease in absenteeism. Teachers commented on the fact that the computer based ILS has infinite patience with slow paced learners, offering varied approaches as necessary. They noted the ease of monitoring student time on task and reviewing the computer generated

reports to quickly assess progress both of individual students and of the entire class. They liked the bookmark function which automatically starts the student at the place in the lesson at which he/she left it the previous class period, saving precious teacher preparation time which can then be spent working directly with individual students, with student groups, or accomplishing other teaching tasks.

The teachers appreciated the fact that they do not have to assume the duties of the lab technician. Some were enthusiastic about the way the labs are conducted, utilizing the services of a local person trained by Jostens. They expressed gratitude that toll free help line telephone service is extended by Jostens both to teachers and lab technicians whenever a question or problem arises.

While teachers expressed appreciation for the inservicing provided by Jostens, most felt a need for continuous inservice, indicating that this is a problem which must be resolved jointly by the individual school districts and by Jostens, since costs for time and travel are restrictive.

What is the future for a computer based integrated learning system in bush schools?

First of all, teachers are not going to be replaced by computers. Teachers are the real key to solving curriculum problems since it is teachers and administrators who provide educational leadership, planning expertise, and student guidance which is prerequisite to effective schooling. These professionals will decide the future of a computer based integrated learning system in their bush schools.

The integrated learning system is a powerful, versatile tool which teachers will use as a means of increasing their effectiveness largely in direct relationship to their own feelings of competence and comfort concerning the system and their understanding of the educational improvement which the ILS can help them achieve.

In the bush schools in Alaska where teacher and administrator turnover rates are high, the utilization of the ILS in basic education can be a stablizing influence within and between schools, a means of maintaining continuity in the instructional program. The reports generated by the system can save hours and weeks of diagnostic tests and reviews by teachers to determine the best starting point for each student at the beginning of each school year and can provide up-to-date information concerning individual student and class achievement throughout the school term. In addition, the teacher can find evidence in the reports of other problems of the students such as need for improvement of time on task.

According to Dr. Ralph Patrick, the curriculum guidelines which he developed for Jostens Learning "will result in students experiencing all the curriculum strands at each program level, resulting in high correlation with the classroom program and introducing the student to a complete curriculum rather than focusing only on low order skills." Therefore, it may be wise to consider the ILS as the core curriculum in areas of high teacher and/or student mobility.

I believe that if a computer based integrated learning system such as Jostens serves as the core curriculum, it may be possible to restructure the professional staffs in the bush schools. During my

teaching career I often thought that if the ratio of students to teacher were smaller, I could accomplish considerably more, especially when I was teaching in the multigraded classrooms of the bush.

During this time laws were passed which mandated special assistance for certain students, which on paper sounded good to everybody except the classroom teacher who was then expected somehow to make certain that the "special" students who were pulled out of class frequently for "special" help, or "enrichment", didn't miss out on the regular classroom instruction. The advent of the ILS encourages one to think that this questionable type of treatment of students may one day come to an end.

I don't anticipate that the use of an ILS will decrease the demand for classroom teachers; it should make the ratio of students to teacher acceptable for the first time and put the the "special teachers" of certain "special students" back into the classroom where they belong, ending the tagging, tracking, or however one prefers to designate the current labeling which stays with some students all of their lives and which research has shown actually hinders their educational development. Also for the first time, perhaps, the main body of students labeled "average" can claim equal instructional time with their teacher and their fair share of the educational funds which currently go only to special education programs of various kinds. The competent usage of a computer based integrated learning system shows great promise toward acceptance of every student as a "special" individual and every teacher as a "special" teaching professional.

What are some recommendations for more effective use of integrated learning systems in bush schools?

The teachers in any school must realize the need for technological assistance, since any technological solution necessarily relies on teacher commitment and support to ensure success.

Whenever any educational tool comes under consideration for purchase, the teachers in the school who will be expected to use the new technology must be involved both in its selection and the ground rules for its use. Considerable research shows that whenever a new approach to learning is imposed from the top its risk of failure is great.

Teachers must understand the advantages and limitations of the ILS under consideration before its purchase and installation. They must also know what they want the technology to help them achieve.

The teachers who will be expected to utilize the ILS must realize their position as the educational keystone, that their role is crucial to the success of every phase of the curriculum. They must not be allowed to feel that they are being preempted by the new technology, rather that they control it at all times. They must feel competent and comfortable with it.

Comprehensive inservice at every step is crucial, from ascertaining the need for the ILS, through the purchase, installation and use.

Sufficient time and guidance must be provided to enable teachers to understand the system in order to achieve the most favorable results.

Teachers must be encouraged to learn from and share with one and another in a collegial atmosphere in order to obtain the best results with any educational tool.

Teachers must be intimately involved (physically present and mentally active) during laboratory sessions, performing their job as educators, observing and assisting students. One school principal commented:

> "With an advanced and technical system, it is not practical or realistic to expect teachers to manage and monitor the system. Dedicated lab attendants are identified and trained in order to handle bugs in the system, adjust student lessons, provide lesson results to teachers, and assist teachers in specific tasks..... The certified teacher is present during all work sessions by students, and they and the lab attendant closely monitor students and provide encouragement and help when needed. This interactive human element is also critical for maximum effectiveness of the system" (Kwethluk Community School Principal 1990).

Institutions which provide professional degrees in education must become cognizant of the possibilities of the computer based integrated learning system as perhaps the most powerful tool with which to restructure and revitalize public education that has been developed in this century. Furthermore, these institutions should encourage undergraduate students and professional educators to learn the most proficient utilization of the ILS by offering courses as part of the curriculum of the teacher education program of the School of Education.

Further research should be conducted, both of the Jostens Learning System and of other leading computer based learning systems in order to ascertain the degree of effectiveness this modern technology can bring to the bush schools.

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